

CLAIMS

I claim:

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1. A two-way data communication system for communication between a computer and a two-way data communication device selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, said two-way data communication system comprising:

a two-way data communication network;
a server computer comprising:

a two-way data communication interface module coupled to said two-way data communication network; and

a server coupled to said two-way data communication interface module;

wherein said server receives a message including a resource locator from said two-way data communication network, and said resource locator includes an address of said server;

said server processes said message using said resource locator; and

said server transmits a response to said message over said two-way data communication network;

a two-way data communication device coupled to said two-way data communication network wherein said two-way data communication device is selected from the group consisting of a cellular telephone, a two-way pager, and a telephone, and further wherein said two-way data communication device further comprises:

a network interface module coupled to

said two-way data communication network; and
an client module coupled to said network
interface module;

5 wherein said client module
transmits said message including said
resource locator to said server over
said two-way data communication network;
and

10 said client module processes said
response to said message from said
server wherein said response includes
information for user interaction over
said two-way data communication network.

15 2. A two-way data communication system as in
Claim 1 wherein said client module further comprises an
interpreter wherein said interpreter generates a user
interface using information in said response, and said
user interface includes at least one user data input
20 option associated with a resource locator.

25 3. A two-way data communication system as in
Claim 2 wherein said resource locator associated with
said at least one user data input option addresses an
object on said server computer.

30 4. A two-way data communication system as in
Claim 2 wherein said resource locator associated with
said at least one user data input option addresses an
object on another server computer coupled to said two-
way data communication network.

35 5. A two-way data communication system as in
Claim 1 wherein said interpreter includes a plurality
of managers including a user interface manager coupled
to a display of said two-way data communication device

wherein said user interface manager handles interactions with said display.

5 6. A two-way data communication system as in Claim 5 wherein said user interface manager is coupled to a keypad of said two-way data communication device and further wherein said user interface manager handles interactions with said keypad.

10 7. A two-way data communication system as in Claim 6 wherein upon input of data from said keypad, said interpreter generates another message including another resource locator wherein said another resource locator includes said address of said server and said
15 input data.

20 8. A two-way data communication system as in Claim 7 wherein said another resource locator including said address of said server and said input data comprises a uniform resource locator.

25 9. A two-way data communication system as in Claim 1 wherein said response includes a plurality of resource locators and at least one of said plurality of resource locators includes an address to another server coupled to said communication network.

30 10. A two-way data communication system as in Claim 1 wherein said server is a stateless server and upon said server completing transmission of said response, said server completes all processing of said request and retains no state information for said response.

35 11. A two-way data communication system as in Claim 1 wherein upon said server completing

transmission of said response, said server maintains state information concerning said message wherein said server utilizes said state information concerning said message in response to another message from said two-way data communication device.

12. A two-way data communication system as in Claim 1 wherein said two-way data communication device further comprises:

10 a memory; and
a resource locator stored in said memory.

13. A two-way data communication system as in Claim 1 wherein said server computer further comprises:

15 a memory; and
at least one common gateway interface program stored in said memory.

14. A two-way data communication system as in Claim 1 wherein said server computer further comprises:

20 a memory; and
at least one card deck stored in said memory.

15. A two-way data communication system as in Claim 14 wherein said at least one card deck includes a display card.

16. A two-way data communication system as in Claim 14 wherein said at least one card deck includes a choice card.

17. A two-way data communication system as in Claim 14 wherein said at least one card deck includes an entry card.

18. A two-way data communication system as in Claim 1 wherein said client module further comprises a predictive text entry module.

5 19. A two-way data communication system as in Claim 1 wherein said two-way data communication device further comprises:

a keypad having a plurality of keys; and
a keypad module coupled to said keypad and to

10 said client module

wherein upon a user pressing a key in said plurality of keys, said keypad module stores information identifying the pressed key in a memory; and

15 said keypad module notifies said client module of said key press.

20. A two-way data communication system as in Claim 19 wherein said client module further comprises a predictive data entry module, wherein said client module uses said predictive data entry module to process said stored information identifying the pressed key upon said client module receiving said notification of said key press.

25 21. A two-way data communication system as in Claim 19 wherein said two-way data communication device further comprises:

30 a card deck stored in said memory of said two-way data communication device.

22. A two-way data communication system as in Claim 21 wherein said at least one card deck includes a display card.

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23. A two-way data communication system as in

Claim 21 wherein said at least one card deck includes a choice card.

24. A two-way data communication system as in
5 Claim 21 wherein said at least one card deck includes an entry card.

25. A two-way data communication system as in
Claim 1 wherein said two-way data communication device
10 further comprises:

a display; and
a display module coupled to said display and
to said client module wherein said display module
drives said display in response to user interface
15 information from said client module.

26. A two-way data communication system as in
Claim 19 wherein said two-way data communication device
further comprises:

20 a display; and
a display module coupled to said display and
to said client module wherein said display module
drives said display in response to user interface
information from said client module.

27. A two-way data communication system as in
Claim 1 wherein said two-way data communication device
is said cellular telephone.

28. A two-way data communication system as in
30 Claim 1 wherein said two-way data communication device is said two-way pager.

29. A two-way data communication system as in
35 Claim 1 wherein said two-way data communication device is said telephone.

30. A two-way data communication system for communication between a server computer and a cellular telephone, said two-way data communication system comprising:

5 a data capable cellular telephone communication network;

a server computer comprising:

10 a two-way data communication interface module coupled to said data capable cellular telephone communication network; and

a server coupled to said two-way data communication interface module;

15 wherein said server receives a message including a resource locator from said data capable cellular telephone communication network wherein said resource locator includes an address of said server;

20 said server processes said message using said resource locator; and

said server transmits a response to said message over said data capable cellular telephone communication network;

25 a cellular telephone coupled to said data capable cellular telephone communication network wherein said cellular telephone further comprises:

30 a network interface module coupled to said data capable cellular telephone communication network; and

an client module coupled to said network interface module;

35 wherein said client module transmits said message including said resource locator to said server over said data capable cellular telephone

communication network; and

said client module processes said response to said message from said server wherein said response includes information for user interaction over said data capable cellular telephone communication network.

31. A two-way data communication system as in Claim 30 wherein said client module further comprises an interpreter wherein said interpreter generates a user interface using information in said response and further wherein said interface includes at least one user data input option associated with a resource locator.

32. A two-way data communication system as in Claim 31 wherein said resource locator associated with said user data input option addresses an object on said server computer.

33. A two-way data communication system as in Claim 31 wherein said resource locator associated with said user data input option addresses an object on another server computer coupled to said data capable cellular telephone communication network.

34. A two-way data communication system as in Claim 30 wherein said interpreter includes a plurality of managers including a user interface manager coupled to a display of said cellular telephone wherein said user interface manager handles interactions with said display.

35. A two-way data communication system as in Claim 34 wherein said user interface manager is coupled

to a keypad of said cellular telephone and further wherein said user interface manager handles interactions with said keypad.

5 36. A two-way data communication system as in Claim 35 wherein upon input of data from said keypad, said interpreter generates another message including another resource locator wherein said another resource locator includes said address of said server and said
10 input data.

37. A two-way data communication system as in Claim 36 wherein said another resource locator including said address of said server and said input
15 data comprises a uniform resource locator.

38. A two-way data communication system as in Claim 30 wherein said response includes a plurality of resource locators and at least one of said plurality of
20 resource locators includes an address to another server coupled to said communication network.

39. A two-way data communication system as in Claim 30 wherein said server is a stateless server and upon said server completing transmission of said
25 response, said server completes all processing of said request and retains no state information for said response.

40. A two-way data communication system as in Claim 30 wherein upon said server completing transmission of said response, said server maintains state information concerning said message wherein said
30 server utilizes said state information concerning said message in response to another message from said cellular telephone.
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41. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer comprising:

generating a message by a client module in response to data entered by said user of a two-way data communication device coupled to a two-way data communication network,

wherein said client module executes on a microcontroller of said two-way data communication device;

said message includes a resource locator; and

said two-way data communication device is selected from a group consisting of a cellular telephone, a two-way pager, and a telephone

transmitting said message over said two-way data communication network to a server computer wherein said server computer is identified by said resource locator;

executing an application on said server computer identified by said resource locator to generate a response to said message; and

transmitting said response to a location identified by said application.

42. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 41 wherein said response is transmitted to said client module.

43. A method for using a two-way data

communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 42 further comprising:

5 interpreting said response by said client module and generating a user interface using information in said response wherein said interface includes at least one user data input option associated with a resource locator.

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44. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in
15 Claim 43 wherein said resource locator associated with said user data input option addresses an object on said server computer.

45. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in
20 Claim 43 wherein said resource locator associated with said user data input option addresses an object on another server computer.

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46. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a
30 telephone, to communicate with a server computer as in Claim 43 further comprising:

 interpreting a data input entry by a user of said two-way data communication device.

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47. A method for using a two-way data communication device, selected from a group consisting

of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 46 further comprising:

5 appending said data input entry to said resource locator associated with said data input entry option.

48. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 42 wherein said response is a card deck and further wherein said card deck includes at least one card.

15 49. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 42 further comprising:

20 storing said card deck stored in a memory of two-way communication device.

50. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 49 further comprising:

30 processing said stored card deck using said client module.

51. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 50 further comprising:

generating a display on two-way data communication device for each card in said card deck.

5 52. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 51 wherein said at least one card is a display
10 card.

15 53. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 51 wherein said at least one card is an entry card.

20 54. A method for using a two-way data communication device, selected from a group consisting of a cellular telephone, a two-way pager, and a telephone, to communicate with a server computer as in Claim 51 wherein said at least one card is a choice card.

25 55. A two-way data communication device having a microcontroller, wherein said two-way data communication device comprises:

30 a memory;
 a display;
 a display module coupled to said display
wherein said display module drives said display;
 a keypad including a plurality of keys;
 a keypad module coupled to said keypad
35 wherein upon a user pressing a key in said plurality of keys, said keypad module

stores information identifying the pressed key in said memory;

a network interface module wherein said network interface module receives data from and sends data to a two-way data communication network;

a client module coupled to said display module, said network interface module, said keypad module, and said memory;

wherein said client module executes on said microcontroller;

said client module, in response to a signal from said keypad module, processes said stored information identifying the pressed key and stores a character in a memory buffer; and

upon completion of data entry, said client module retrieves all characters in said memory buffer and generates a request including said characters to said network interface module which in turn transmits said request including said characters over said two-way data communication network.

56. A two-way data communication device as in Claim 55 further comprising:

a card deck stored in said memory.

57. A two-way data communication device as in Claim 56 wherein said card deck includes a display card.

58. A two-way data communication device as in Claim 57 wherein said client module processes said display card and sends information to said display module.

59. A two-way data communication device as in Claim 56 wherein said card deck includes a choice card.

5 60. A two-way data communication device as in Claim 59 wherein upon said client module processing said choice card, said client module retrieves said stored information identifying the pressed key, and generates a request for a choice corresponding to the pressed key to said server.

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61. A two-way data communication device as in Claim 56 wherein said card deck includes a display card.

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B2

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